

# DATA SHEET

## HIGH CURRENT ZERO OHM JUMPER

PA series

sizes 0100/ 0201/ 0402/ 0603/ 0805/ 1206/ 2010

RoHS compliant & Halogen free



SCOPE

This specification describes PA0100~2010 series jumper with metal alloy layer.

APPLICATIONS

- Consumer goods
- Computer
- Telecom / Datacom
- Industrial / Power supply
- Alternative Energy
- Car electronics

FEATURES

- PA Jumper resistors are designed to be used as a zero ohm jumper
- AEC-Q200 qualified
- Halogen-free Epoxy
- RoHS compliant
- Reduce environmentally hazardous wastes
- High component and equipment reliability
- Non-forbidden materials used in products/production
- High current capability
- Moisture sensitivity level: MSL 1

ORDERING INFORMATION - GLOBAL PART NUMBER

Global part numbers are identified by the series, size, tolerance, packing type, temperature coefficient, taping reel and resistance value.

**GLOBAL PART NUMBER**

**PA    XXXX    X    X    X    XX    OR    L**  
 (1)    (2)    (3)    (4)    (5)    (6)    (7)

**(1) SIZE**

0100 / 0201 / 0402 / 0603 / 0805 / 1206 / 2010

**(2) TOLERANCE**

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**(3) PACKAGING TYPE**

R = Paper taping reel (PA0100~1206)  
 K = Embossed taping reel (PA2010)

**(4) TEMPERATURE COEFFICIENT OF RESISTANCE**

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**(5) TAPING REEL**

07 = 7 inch dia. Reel  
 7W = 7 inch dia. Reel, (0402 only)  
 47 = 7 inch dia. Reel, (0805 only)

**(6) RESISTANCE VALUE**

OR = 0 Ω

**(7) DEFAULT CODE**

Letter L is the system default code for ordering only. (Note)

Resistance rule of global part number	
Resistance code rule	Example
OR (0 Ω)	OR = 0 Ω

**ORDERING EXAMPLE**

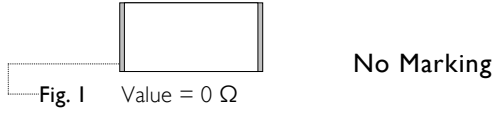
The ordering code for a PA0603 chip resistor, value 0 Ω, supplied in 7-inch tape reel with 5Kpcs quantify is: PA0603-R-070RL.

**NOTE**

1. All our RChip products are RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead-Free Process"

**MARKING**

PA0201



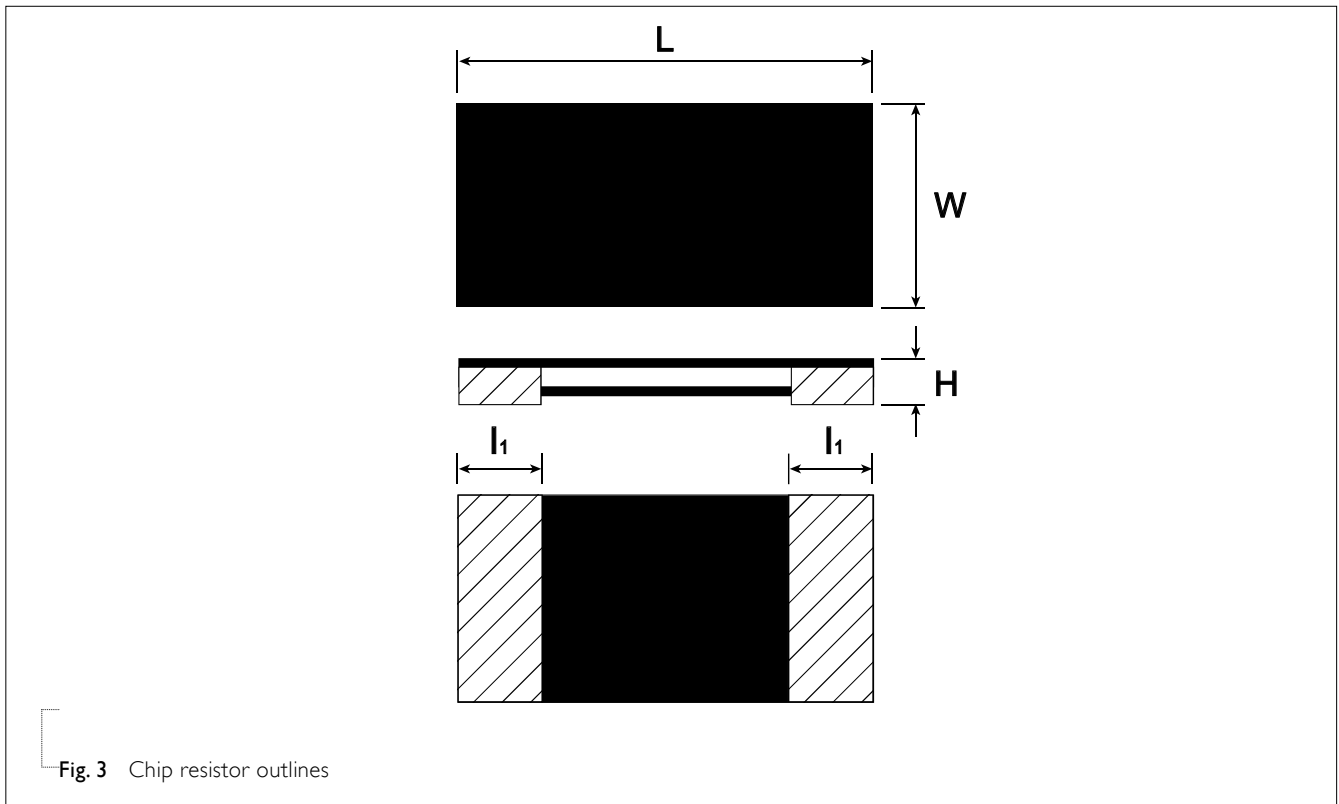
PA0100 / 0402 / 0603 / 0805 / 1206 / 2010



**CONSTRUCTION**

The advanced resistive material is adopted to get the low resistance and is covered with a protective coat. Finally, the three external terminations (Cu / Ni / matte Tin) are added, as shown in Fig. 3.

**Outlines**



**DIMENSION**

Table 1 For outlines, please refer to Fig. 3

TYPE	L (mm)	W (mm)	H (mm)	l <sub>1</sub> (mm)
PA0100	0.40±0.03	0.20±0.03	Max. 0.15	0.10±0.03
PA0201	0.60±0.03	0.31±0.04	Max. 0.35	0.15±0.06
PA0402	1.00±0.10	0.55±0.10	Max. 0.35	0.25±0.10
PA0603	1.60±0.20	0.8+0.10/-0.20	0.45±0.15	0.38±0.12
PA0805	2.00±0.15	1.20±0.15	Max. 0.40	0.35±0.25
PA1206	3.05±0.20	1.52±0.20	0.50±0.20	0.70±0.20
PA2010	5.08±0.20	2.54±0.20	0.40±0.15	0.70±0.20

Note:

1. For relevant physical dimensions, please refer to construction outlines.
2. Please contact with sales offices, distributors and representatives in your region before ordering.

**ELECTRICAL CHARACTERISTICS**

Table 2

	PA0100	PA0201	PA0402		PA0603	PA0805	PA1206	PA2010
Global part number (code 09-10)	07	07	07	7W	07	47	07	07
Jumper Criteria	Resistance Value, Max. (mΩ)	≤2mΩ	≤5mΩ	≤1mΩ	≤0.2mΩ	≤0.2mΩ	≤0.2mΩ	≤0.2mΩ
	Rated Current (A)	8	4.5	11	23	50	50	70.7
	Rated Power (W)	1/8	1/10	1/8	1/10	1/2	1/2	1
Operating Temperature Range	-55°C to +125°C				-55°C to +155°C		-55°C to +170°C	

Note: Please contact with sales offices, distributors and representatives in your region before ordering.

**FUNCTIONAL DESCRIPTION**

**OPERATING TEMPERATURE RANGE**

- PA0100 to PA0402: -55°C to +125°C
- PA0603/ PA0805: -55°C to +155°C
- PA1206/ PA2010: -55°C to +170°C

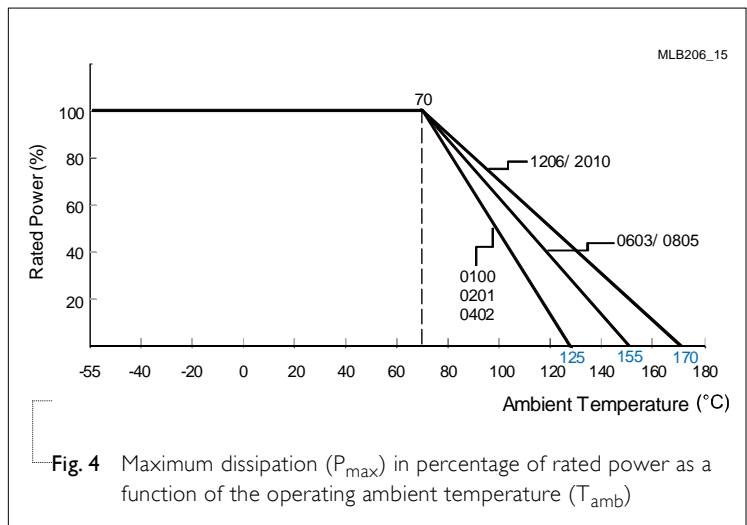


Fig. 4 Maximum dissipation (P<sub>max</sub>) in percentage of rated power as a function of the operating ambient temperature (T<sub>amb</sub>)

**PACKING STYLE AND PACKAGING QUANTITY**

Table 3 Packing style and packaging quantity

PACKING STYLE	REEL DIMENSION	PA0100	PA0201	PA0402	PA0603	PA0805	PA1206	PA2010
Paper taping reel (R)	7" (178 mm)	20,000	10,000	10,000	5,000	5,000	4000	---
Embossed Taping Reel (K)	7" (178 mm)	---	---	---	---	---	---	4000

**PAPER TAPE**

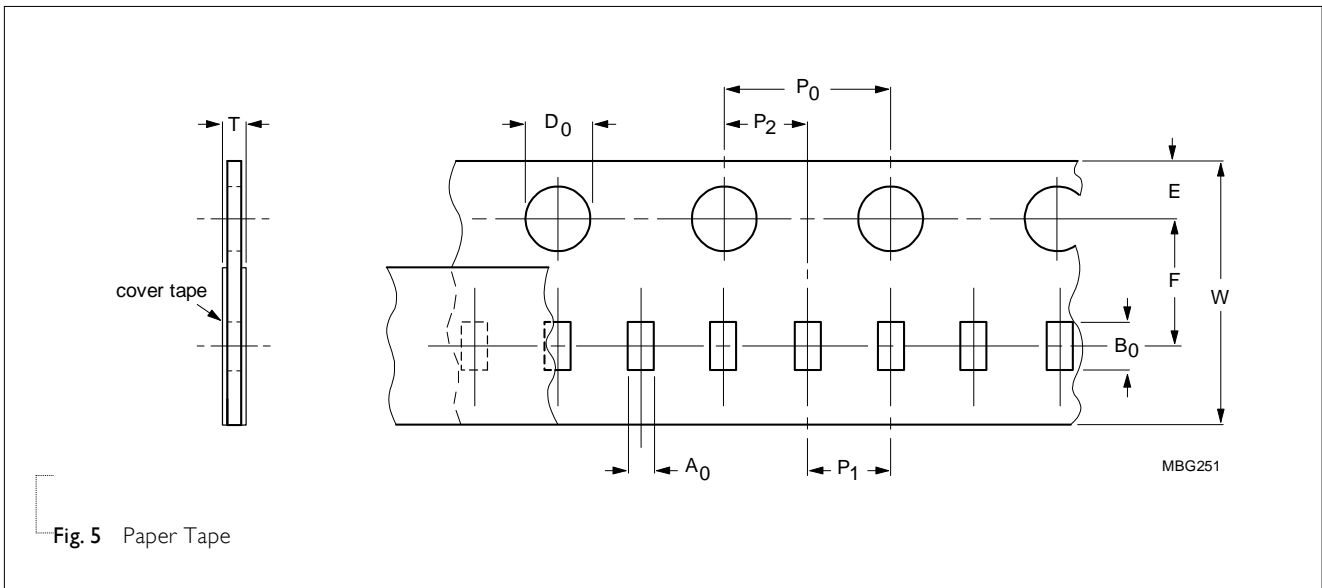


Fig. 5 Paper Tape

Table 4 Dimensions of paper tape for relevant chip resistors size

SIZE	SYMBOL									
	A <sub>0</sub>	B <sub>0</sub>	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	ØD <sub>0</sub>	T
PA0100	0.24±0.03	0.45±0.03	8.00±0.20	1.75±0.10	3.50±0.05	4.00±0.05	2.00±0.10	2.00±0.05	1.50±0.10	0.31±0.10
PA0201	0.38±0.10	0.68±0.10	8.00± 0.10	1.75± 0.10	3.50± 0.10	4.00± 0.10	2.00± 0.10	2.00± 0.10	1.55± 0.05	0.42±0.10
PA0402	0.59± 0.10	1.20± 0.10	8.00± 0.10	1.75± 0.10	3.50± 0.10	4.00± 0.10	2.00± 0.10	2.00± 0.10	1.55± 0.05	0.45±0.10
PA0603	1.10± 0.10	1.90± 0.10	8.00± 0.10	1.75± 0.10	3.50± 0.10	4.00± 0.10	4.00± 0.10	2.00± 0.10	1.55± 0.05	0.43± 0.10
PA0805	1.62± 0.10	2.35± 0.10	8.00± 0.10	1.75± 0.10	3.50± 0.10	4.00± 0.10	4.00± 0.10	2.00± 0.10	1.55± 0.05	0.43± 0.10
PA1206	1.90±0.20	3.50±0.20	8.00±0.20	1.75±0.10	3.50±0.50	4.00±0.10	4.00±0.10	2.00±0.05	1.50±0.10	0.75±0.20/-0

**EMBOSSED TAPE**

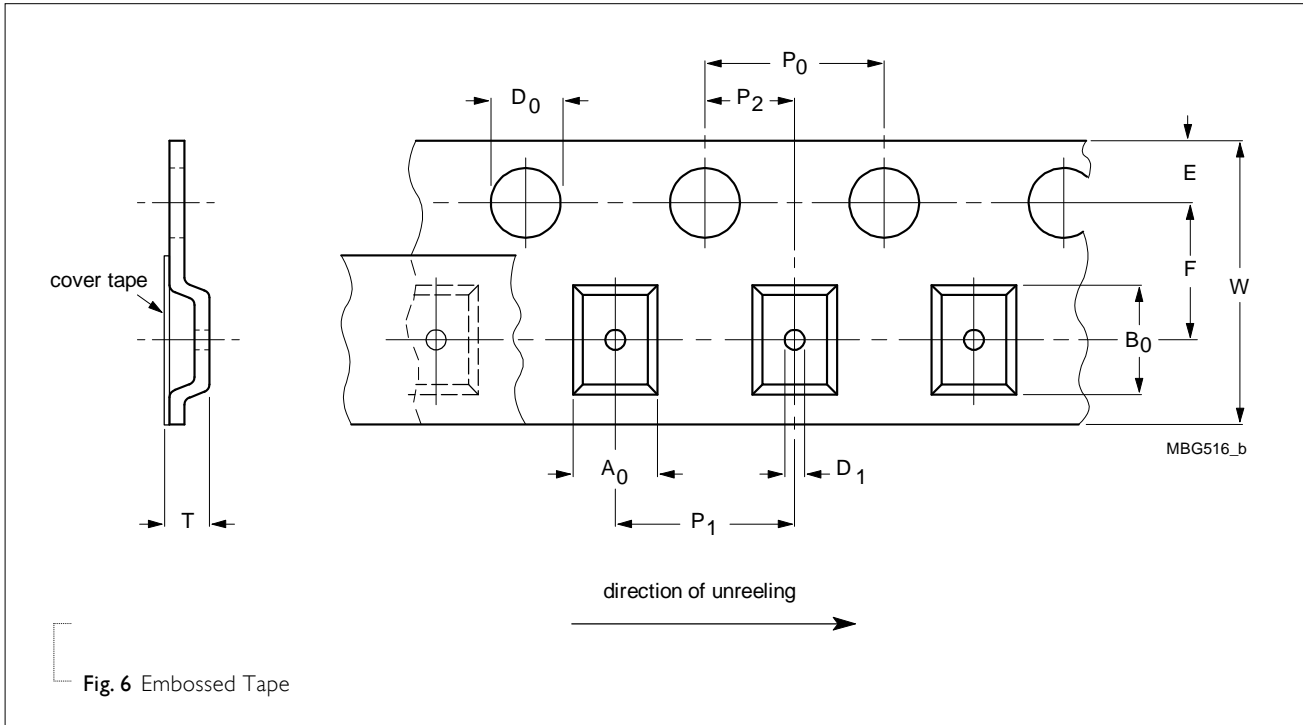


Fig. 6 Embossed Tape

Table 5 Dimensions of embossed tape for relevant chip resistors size

SIZE	SYMBOL											Unit: mm
	A <sub>0</sub>	B <sub>0</sub>	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	ΦD <sub>0</sub>	ΦD <sub>1</sub>	T	
PA2010	3.40±0.15	6.70±0.15	12.0±0.30	1.75±0.10	5.50±0.10	4.00±0.10	4.00±0.10	2.00±0.10	1.50±0.10	1.50±0.10	0.80±0.15	

**REEL SPECIFICATION**

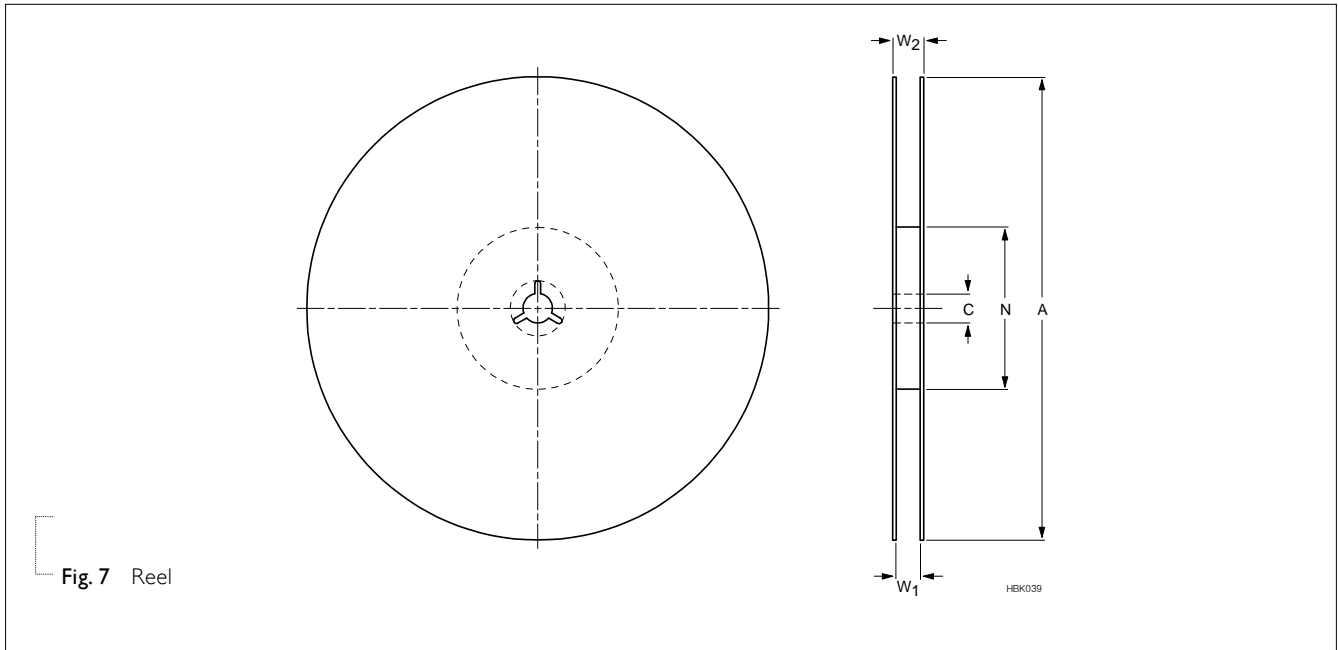


Fig. 7 Reel

Table 6 Dimensions of reel specification for relevant chip resistors size

SIZE	QUANTITY PER REEL	REEL SIZE		SYMBOL	Unit: mm				
		8 mm TAPE WIDE	12 mm TAPE WIDE		A	N	C	D	W <sub>1</sub>
PA0100	20,000	7" (Ø 178 mm)	---	180.0+0/-3.0	60.0+1/-0	13.0± 0.2	21.0± 0.8	9.0± 0.3	11.4± 1.0
PA0201	10,000	7" (Ø 178 mm)	---	178.0± 1.0	60.0+1/-0	13.5± 0.5	21.0± 0.8	9.0± 0.5	12.0± 0.2
PA0402	10,000	7" (Ø 178 mm)	---	178.0± 1.0	60.0+1/-0	13.5± 0.5	21.0± 0.8	9.0± 0.5	12.0± 0.2
PA0603	5,000	7" (Ø 178 mm)	---	178.0± 1.0	60.0+1/-0	13.5± 0.5	21.0± 0.8	9.0± 0.5	12.0± 0.2
PA0805	5,000	7" (Ø 178 mm)	---	178.0± 1.0	60.0+1/-0	13.5± 0.5	21.0± 0.8	9.0± 0.5	12.0± 0.2
PA1206	4,000	7" (Ø 178 mm)	---	178.0± 1.0	60.0+1/-0	13.5± 0.5	21.0± 0.8	9.0± 0.5	12.0± 0.2
PA2010	4,000	---	7" (Ø 178 mm)	178.0± 1.0	60.0+1/-0	13.5± 0.5	21.0± 0.8	13.6± 0.5	16.5± 0.5

**LEADER/TRAILER TAPE SPECIFICATION**

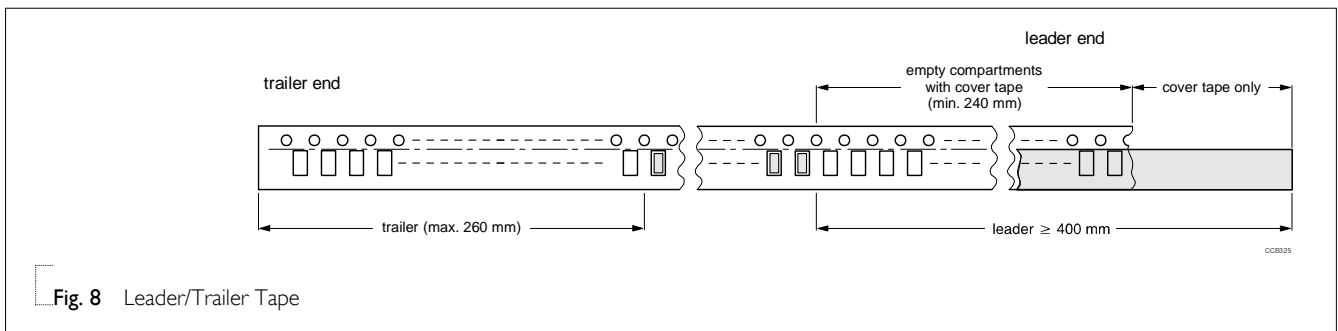


Fig. 8 Leader/Trailer Tape

**FOOTPRINT AND SOLDERING PROFILES**

For recommended soldering profiles, please refer to data sheet “Chip resistors mounting”.

**FOOTPRINT**

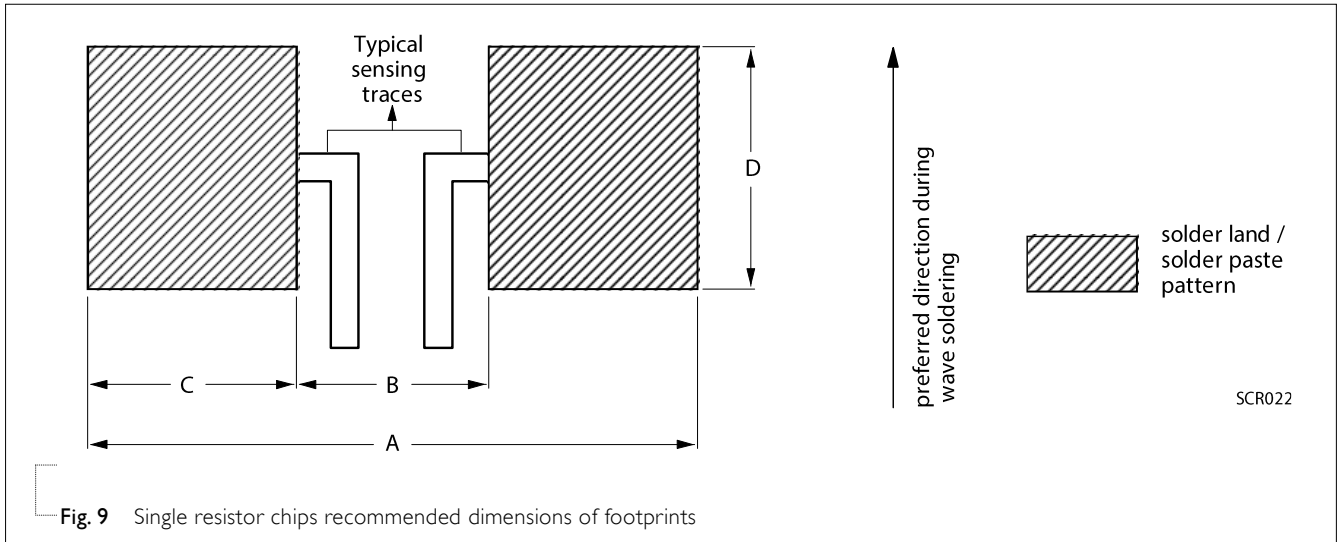


Table 7 Footprint dimensions

SIZE	A	B	C	D	Unit: mm
PA0100	0.5~0.8	0.16~0.2	0.17~0.3	0.2~0.4	
PA0201	1.0	0.3	0.35	0.4	
PA0402	2.0	0.4	0.8	0.6	
PA0603	2.2	0.8	0.7	0.9	
PA0805	3.4	0.8	1.3	1.3	
PA1206	4.0	1.0	1.5	1.8	
PA2010	6.0	3.5	1.25	3.0	



**TESTS AND REQUIREMENTS**

Table 8 Test condition, procedure and requirements

TEST	TEST METHOD	PROCEDURE	REQUIREMENT
Life/ Endurance	MIL-STD-202 Method 108	1,000 hours at 70±2°C applied rated current	0100 : < 2mΩ
	IEC 60115-1 4.25.1	1.5 hours on, 0.5 hour off, still air required	0201 : < 5mΩ 0402 : < 1mΩ(07) < 0.2mΩ(7W) Others : < 0.2mΩ
High Temperature Exposure/ Endurance at upper category temperature	MIL-STD-202 Method 108	1,000 hours, unpowered at	0100 : < 2mΩ
	IEC 60115-1 4.25.3	0100/ 0201/ 0402 : 125±5°C 0603/ 0805 : 155±5°C 1206/ 2010 : 170±5°C	0201 : < 5mΩ 0402 : < 1mΩ(07) < 0.2mΩ(7W) Others : < 0.2mΩ
Moisture Resistance	MIL-STD-202 Method 106	Each temperature / humidity cycle is defined at 8 hours (Method 106G), 3 cycles / 24 hours for 10d. with 25 °C / 65 °C 95% R.H, without steps 7a & 7b, un-powered Parts mounted on test board, without condensation on parts.	0100 : < 2mΩ 0201 : < 5mΩ 0402 : < 1mΩ(07) < 0.2mΩ(7W) Others : < 0.2mΩ No visible damage
Thermal Shock	MIL-STD-202 Method 107	-55/+125°C Note : Number of cycles required is 300. Parts mounted on test board. Maximum transfer time is 20 seconds. Dwell time is 15 minutes.	0100 : < 2mΩ 0201 : < 5mΩ 0402 : < 1mΩ(07) < 0.2mΩ(7W) Others : < 0.2mΩ
Short time overload	IEC 60115-1 4.13	5 times rated power for 5 seconds.	0100 : < 2mΩ 0201 : < 5mΩ 0402 : < 1mΩ(07) < 0.2mΩ(7W) Others : < 0.2mΩ No visible damage
Board Flex/ Bending	IEC 60115-1 4.33	Device mounted on PCB test board as described, only 1 board bending required Bending for 0100 : 5mm 0201 : 3 mm 0402 and above: 2mm Bending time: 60±1 seconds Ohmic value checked during bending	0100 : < 2mΩ 0201 : < 5mΩ 0402 : < 1mΩ(07) < 0.2mΩ(7W) Others : < 0.2mΩ

TEST	TEST METHOD	PROCEDURE	REQUIREMENT
<b>Solderability</b> - Wetting	IPC/JEDEC J-STD-002 test B1	Electrical Test not required Magnification 50X SMD conditions: 1st step : Method B, aging 4 hours at 155°C dry heat 2nd step : lead free solder bath at 245±3°C Dipping time : 3±0,5 seconds	Well tinned (>95% covered) No visible damage
- Leaching	IPC/JEDEC J-STD-002 test D	Lead free solder, 260°C, 30 seconds immersion time	No visible damage
<b>- Resistance to Soldering Heat</b>	MIL-STD-202 Method 210 IEC 60115-1 4.18	Condition B, no pre-heat of samples Lead free solder, 260±5°C, 10±1 seconds immersion time Procedure 2 for SMD: devices fluxed and cleaned with isopropanol	0100 : < 2mΩ 0201: < 5mΩ 0402: < 1mΩ(07) < 0.2mΩ(7W) Others : < 0.2mΩ No visible damage

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 2	Nov. 27, 2023	-	- Upgrade PA0805 & PA0402 specification and add the coding remark in table 2.
Version 1	Jan. 27, 2021	-	- Add sizes of PA0100, PA1206 and PA2010
Version 0	Oct. 05, 2018	-	- Metal low ohmic jumper - PA series

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